

CLAIMS

1. An apparatus for polishing a workpiece comprising:
a polishing member configured to polish the workpiece;
a support structure coupled to the polishing member and configured to move the polishing member to polish the workpiece; and
wherein the support structure includes at least one curved fluid bearing coupled to the polishing member and configured to support the polishing member while it is moved to polish the workpiece.
2. The apparatus of claim 1, wherein:
the fluid bearing supports the polishing member over a region where the polishing member plane of travel changes from a first plane to a second plane.
3. The apparatus of claim 1, further comprising a pressure regulator configured to control pressure of a fluid exhausted from the fluid bearing.
4. The apparatus of claim 1, further comprising a temperature regulator configured to control temperature of a fluid exhausted from the fluid bearing.
5. The apparatus of claim 2, further comprising a temperature regulator configured to control temperature of a fluid exhausted from the fluid bearing.
6. The apparatus of claim 1, wherein:
the support structure includes at least two curved fluid bearings coupled to the polishing member and configured to support the polishing member while it is moved to polish the workpiece.
7. The apparatus of claim 6, wherein:
the fluid bearing supports the polishing member over a region where the polishing pad plane of travel changes from a first plane to a second plane.

8. The apparatus of claim 1, further comprising a pressure regulator configured to control pressure of a fluid exhausted from the fluid bearing.
9. The apparatus of claim 1, wherein the fluid bearing is a substantially hollow structure with a curved portion constructed from perforated sheet metal.
10. The apparatus of claim 1, wherein the support structure includes:
 - a supply spool configured to supply the polishing member and a receive spool configured to receive the polishing member; and
 - a slide member coupled to the supply spool and the receive spool and configured to move the polishing member in a bi-linear manner.
11. The apparatus of claim 2, wherein the support structure includes:
 - a supply spool configured to supply the polishing member and a receive spool configured to receive the polishing member; and
 - a slide member coupled to the supply spool and the receive spool and configured to move the polishing member in a bi-linear manner.
12. The apparatus of claim 6, wherein the support structure includes:
 - a supply spool configured to supply the polishing member and a receive spool configured to receive the polishing member; and
 - a slide member coupled to the supply spool and the receive spool and configured to move the polishing member in a bi-linear manner.
13. The apparatus of claim 7, wherein the support structure includes:
 - a supply spool configured to supply the polishing member and a receive spool configured to receive the polishing member; and
 - a slide member coupled to the supply spool and the receive spool and configured to move the polishing member in a bi-linear manner.
14. A method of polishing a workpiece comprising the steps of:

supporting a polishing member on a fluid bearing between a first end of the polishing member and a second end of the polishing member, the fluid bearing having a curved portion over which the polishing member is redirected from travel on a first plane to travel on a second plane; and moving the polishing member to polish the workpiece.

15. The method of claim 14, wherein the moving step includes bi-directionally moving the polishing member.
16. The method of claim 15 further comprising the step of regulating pressure of a fluid exhausted from the fluid bearing.
17. The method of claim 16 further comprising the step of regulating temperature of a fluid exhausted from the fluid bearing.
18. The method of claim 14 further comprising the step of regulating temperature of the fluid exhausted from the fluid bearing.
19. The method of claim 18, further comprising regulating pressure of a fluid exhausted from the fluid bearing.
20. The method of claim 14, further comprising regulating pressure of a fluid exhausted from the fluid bearing.
21. An integrated circuit manufactured including the method of claim 14.
22. The method of claim 14 further comprising the steps of:
 - supplying a length of the polishing member from a supply structure coupled to a slide member;
 - receiving a length of the polishing member in a receive structure coupled to the slide member;
 - wherein the moving step includes bi-directionally moving the slide member to create a bi-directional movement of the polishing member within a processing area to polish the workpiece.

23. The method of claim 22 further comprising regulating pressure of a fluid exhausted from the fluid bearing.
24. The method of claim 22 further comprising regulating temperature of a fluid exhausted from the fluid bearing.
25. The method of claim 23 further comprising regulating temperature of the fluid exhausted from the fluid bearing.
26. The method of claim 22, wherein the fluid bearing includes a first fluid bearing and a second fluid bearing and the polishing member is supported on the first fluid bearing and the second fluid bearing.
27. The method of claim 26 further comprising the step of exhausting a first fluid at a first pressure from the first fluid bearing and exhausting a second fluid at a second pressure from the second fluid bearing.
28. The method of claim 26 further comprising the step of exhausting a first fluid at a first temperature from the first fluid bearing and exhausting a second fluid at a second temperature from the second fluid bearing.
29. The method of claim 27, further comprising the step of exhausting the first fluid at a first temperature from the first fluid bearing and exhausting the second fluid at a second temperature from the second fluid bearing.
30. An integrated circuit manufactured including the method of claim 22.